

SKADDEN, ARPS, SLATE, MEAGHER & FLOM LLP

1440 NEW YORK AVENUE, N.W.  
WASHINGTON, D.C. 20005-2111

TEL: (202) 371-7000  
FAX: (202) 393-5760  
www.skadden.com

FIRM/AFFILIATE OFFICES

BOSTON  
CHICAGO  
HOUSTON  
LOS ANGELES  
NEW YORK  
PALO ALTO  
WILMINGTON

BEIJING  
BRUSSELS  
FRANKFURT  
HONG KONG  
LONDON  
MOSCOW  
MUNICH  
PARIS  
SÃO PAULO  
SEOUL  
SHANGHAI  
SINGAPORE  
TOKYO  
TORONTO

EMAIL ADDRESS  
BEN.CLAPP@SKADDEN.COM

December 12, 2018

Jennifer Dorman  
Environmental Program Associate  
Remediation and Redevelopment Program  
Wisconsin Department of Natural Resources  
2300 N. Dr. Martin Luther King Jr. Drive  
Milwaukee, WI 53212

RE: Reported Contamination at Milwaukee Die Casting Company, Inc.  
4132 N. Holton Street, Milwaukee, WI  
BRRTS Activity # 02-41-000023, FID # 241228240

Dear Ms. Dorman:

We are in receipt of the letter dated November 16, 2018 from William J. Nelson, Esq., on behalf of the Wisconsin Department of Natural Resources ("WDNR"), rejecting Pharmacia's request for settlement discussion with respect to the above-referenced matter and directing that a Site Investigation Work Plan for the Milwaukee Die Casting Site (the "Site") be submitted by December 15, 2018.

In light of the extensive and costly environmental investigations and clean up actions *voluntarily* completed at the Site by Pharmacia on behalf of Fisher Controls International, Inc. ("Fisher"), Pharmacia finds WDNR's suggestion that it has failed to take action to address environmental conditions at the Site "for decades" both disappointing and completely without merit. In fact, Pharmacia has been working to address environmental conditions at the site for over a decade and has spent over \$14 million doing so. Pharmacia's past actions at the site warrant a more cooperative response than a summary rejection of Pharmacia's reasonable request for discussions aimed at addressing the alleged remaining site conditions in manner acceptable to both WDNR and Pharmacia.

Moreover, the limited legal arguments in WDNR's November 16<sup>th</sup> letter do not persuasively address Pharmacia's threshold assertion that neither it nor Fisher is

Jennifer Dorman  
December 12, 2018  
Page 2

liable for Site conditions as Responsible Parties under the Wisconsin hazardous substance spill law. The sole case cited by WDNR, *State of Wisconsin v. Chrysler Outboard Marine Corp.*, stands for the proposition that a party that generated hazardous wastes and arranged for their disposal may be held responsible for causing a discharge at a third-party waste site by failing to remediate the discharge, regardless of whether that party knew about the discharge. See 219 Wis. 2d 130, 171, 173 (1998). *Chrysler* does not refute, or even relate to, Pharmacia's assertion that neither it nor Fisher, whether through ownership or operation of the Site, or through a theory of successor liability, possessed or controlled a hazardous substance which was discharged, or caused the discharge of a hazardous substance, as is required to incur liability under the spill law. See Wis. Stat. § 292.11(3).

While Pharmacia continues to be of the firm view that neither it nor Fisher is liable at the Site, Pharmacia continues to have an interest in ensuring that the Site does not pose a risk to human health or the environment. Pharmacia, therefore, is willing to work with WDNR on achieving a solution to addressing the alleged remaining Site conditions in a manner acceptable to all parties, including the performance of a site investigation of appropriate scope. To that end, enclosed please find a Site Investigation Work Plan and accompanying cover letter prepared by Geosyntec on behalf of Pharmacia LLC.

By submitting this Site Investigation Work Plan neither Pharmacia nor Fisher is waiving any of its rights under federal or state law. Additionally, nothing in this letter should be deemed an admission of fact or law, or a waiver of any defense or right to contest Pharmacia or Fisher's liability under any state or federal law.

Sincerely,

  
Ben Clapp

Jennifer Dorman  
December 12, 2018  
Page 3

cc: Ronald J. Schott, Esq.  
on behalf of Pharmacia LLC  
Legal Division  
235 East 42nd Street  
New York, NY 10017

Christopher J. Clark  
Pharmacia LLC  
235 E. 42<sup>nd</sup> Street, 219/5/1  
New York, NY 10017

Sheila M. Harvey, Esq.  
Pillsbury Winthrop Shaw Pittman LLP  
1200 17<sup>th</sup> Street, NW  
Washington, DC 20036-3066  
(Counsel for Fisher Controls International, Inc.)

Stephen D. Mueller  
Wisconsin Department of Natural Resources  
Via Email: [StephenD.Mueller@wisconsin.gov](mailto:StephenD.Mueller@wisconsin.gov)

Enclosure

December 14, 2018

Ms. Jennifer Dorman  
Environmental Program Associate  
Remediation and Redevelopment Program  
Wisconsin Department of Natural Resources  
2300 N. Dr. Martin Luther King Jr. Drive  
Milwaukee, WI 53212-3128

**Subject: SITE INVESTIGATION WORK PLAN**  
Milwaukee Die Casting Company Site  
4132 North Holton Street, Milwaukee, Wisconsin  
WDNR BRRTS # 02-41-000023  
WDNR FID # 241228240

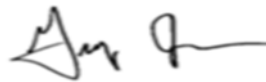
Dear Ms. Dorman,

Please find enclosed the Site Investigation Work Plan (“Work Plan”) for the subject site. This Work Plan is being submitted on behalf of Pharmacia, LLC (Pharmacia) pursuant to Item 2 on Page 3 of Wisconsin Department of Natural Resources’ (WDNR’s) August 10, 2018 letter to Pharmacia and Fisher Controls International, Inc. (Fisher). Pharmacia is acting on behalf of Fisher in this matter. The Work Plan is also being submitted electronically in accordance with WDNR’s “Guidance for Submitting Documents” (RR-690).

Pharmacia is requesting WDNR review and approval of this Work Plan. The \$700 review fee (check # 2743) is enclosed.

Please contact me at 262.834.0226 if you have any questions regarding this submittal.

Sincerely,



Greg Johnson, P.H., P.G., P.E.  
Senior Engineer  
(licensed P.E. in WI, P.H. in WI, P.G. in IL, WI)

Enclosure

cc: Mr. Christopher Clark, Pharmacia LLC  
Mr. Stephen Mueller, WDNR

*Prepared for*

**Pharmacia LLC**

## **SITE INVESTIGATION WORK PLAN**

### **Milwaukee Die Casting Company Site**

4132 North Holton Street

Milwaukee, Wisconsin

WDNR BRRTS # 02-41-000023

WDNR FID # 241228240

*Prepared by*

**Geosyntec**   
consultants

10600 N. Port Washington Road, Suite 100

Mequon, Wisconsin 53092

Project Number CHW8271M

December 14, 2018

# SITE INVESTIGATION WORK PLAN

## Milwaukee Die Casting Company Site

4132 North Holton Street  
Milwaukee, Wisconsin  
WDNR BRRTS # 02-41-000023  
WDNR FID # 241228240

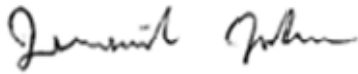
*Prepared for*

Pharmacia LLC

*Prepared by*

Geosyntec Consultants  
10600 N. Port Washington Road, Suite 100  
Mequon, Wisconsin 53092  
Project Number CHW8271M

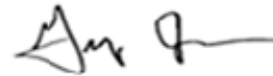
December 14, 2018



---

Jeremiah Johnson, P.G.  
Project Geologist  
(Licensed P.G. in WI)

"I, Jeremiah Johnson, hereby certify that I am a hydrogeologist as that term is defined in s. NR 712.03 (1), Wis. Adm. Code, am registered in accordance with the requirements of ch. GHSS 2, Wis. Adm. Code, or licensed in accordance with the requirements of ch. GHSS 3, Wis. Adm. Code, and that, to the best of my knowledge, all of the information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."



---

Gregory L. Johnson, P.G., P.H., P.E.  
Senior Engineer, P.E. #: 29898-006  
(Licensed P.E. in WI, P.H. in WI, P.G. in IL, WI)

"I, Gregory L. Johnson, hereby certify that I am a registered professional engineer in the State of Wisconsin, registered in accordance with the requirements of ch. A-E 4, Wis. Adm. Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wis. Adm. Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in chs. NR 700 to 726, Wis. Adm. Code."

---

**TABLE OF CONTENTS**

|    |   |    |
|----|---|----|
| 1. | INTRODUCTION .....  | 1  |
| 2. | BACKGROUND INFORMATION .....                                    | 2  |
|    | 2.1 Site Ownership .....  | 2  |
|    | 2.2 Site Location.....  | 2  |
|    | 2.3 Site Description .....                                      | 2  |
|    | 2.4 Previous CVOC Investigation and Removal Action Summary..... | 3  |
|    | 2.5 Physiographical and Geological Setting.....                 | 3  |
|    | 2.5.1 Topography and Drainage.....                              | 3  |
|    | 2.5.2 Geology and Hydrogeology .....                            | 4  |
| 3. | PRE-INVESTIGATION.....  | 5  |
|    | 3.1 Health and Safety Plan .....                                | 5  |
|    | 3.2 Utility Assessment.....                                     | 5  |
|    | 3.3 Permits and Access Agreements.....                          | 5  |
| 4. | ADDITIONAL GROUNDWATER INVESTIGATION .....                      | 6  |
|    | 4.1 Objectives .....  | 6  |
|    | 4.2 Scope and Rationale .....                                   | 6  |
|    | 4.3 Procedures .....  | 8  |
|    | 4.3.1 Soil Boring Drilling .....                                | 8  |
|    | 4.3.2 Monitoring Well Installation and Development .....        | 8  |
|    | 4.3.3 Surveying .....   | 8  |
|    | 4.3.4 Groundwater Sampling and Analysis .....                   | 9  |
|    | 4.3.5 Investigation-Derived Waste Management.....               | 9  |
|    | 4.3.6 Quality Assurance/Quality Control.....                    | 9  |
|    | 4.3.7 Site Cap Considerations .....                             | 10 |
|    | 4.3.8 Data Evaluation.....                                      | 10 |
| 5. | VAPOR PATHWAY INVESTIGATION .....                               | 11 |
|    | 5.1 Objectives .....  | 11 |
|    | 5.2 Scope and Rationale .....                                   | 11 |
|    | 5.3 Procedures .....  | 12 |
|    | 5.3.1 Soil Gas Sampling.....                                    | 12 |
|    | 5.3.2 Investigation-Derived Waste Management.....               | 12 |
|    | 5.3.3 Quality Assurance/Quality Control.....                    | 13 |
|    | 5.3.1 Data Evaluation.....                                      | 13 |

6. REPORTING AND SCHEDULE ..... 14

7. REFERENCES ..... 15



**LIST OF TABLES**

|         |  |
|---------|--|
| Table 1 | Pre-Removal Action CVOC Groundwater Sample Analytical Data Summary |
|---------|--|

**LIST OF FIGURES**

|          |                                   |
|----------|-----------------------------------|
| Figure 1 | Site Location Map                 |
| Figure 2 | Site Layout Map                   |
| Figure 3 | CVOC Soil and Groundwater Summary |
| Figure 4 | Proposed Investigation Map        |

## 1. INTRODUCTION

At the direction of the Wisconsin Department of Natural Resources (WDNR), this Site Investigation Work Plan (“Work Plan”) was prepared by Geosyntec Consultants (Geosyntec) on behalf of Pharmacia, LLC (Pharmacia) for the Milwaukee Die Casting Company (MDCC) site located at 4132 North Holton Street, Milwaukee, Wisconsin (“Site”).

This Work Plan was prepared pursuant to Item 2 on Page 3 of WDNR’s August 10, 2018 letter to Pharmacia and Fisher Controls International Inc. (Fisher) (WDNR, 2018a), referred to hereafter as the WDNR Notice Letter. Pharmacia is acting on behalf of Fisher in this matter. This Work Plan was prepared in general accordance with Wisconsin Administrative Code NR 716.09.

Significant removal action activities were conducted at the Site pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) by Pharmacia and Fisher between 2013 and 2015 in accordance with an Administrative Settlement Agreement and Order on Consent for Removal Action (AOC) with the United States Environmental Protection Agency (USEPA), effective date March 12, 2013 (USEPA, 2013). The Site removal action included, among other things, the excavation and disposal of on-Site unsaturated chlorinated volatile organic compounds (CVOC)-impacted soil with concentrations reported at greater than USEPA industrial regional screening levels (RSLs) and off-site unsaturated CVOC-impacted soil with concentrations reported at greater than USEPA residential RSLs. The USEPA issued a “Notification of Completion-Compliance with Settlement Agreement” on August 20, 2018 (USEPA, 2018). The scope of work presented in this document is intended to perform an additional groundwater investigation and vapor pathway assessment related to potential residual CVOC impacts at the Site, as directed by WDNR in the WDNR Notice Letter.

This Work Plan includes the following sections:

- Section 1: Introduction;
- Section 2: Background Information;
- Section 3: Pre-Investigation;
- Section 4: Additional Groundwater Investigation;
- Section 5: Vapor Pathway Investigation;
- Section 6: Reporting and Schedule; and
- Section 7: References.

## 2. BACKGROUND INFORMATION

### 2.1 Site Ownership

The Site is currently owned by the Redevelopment Authority of the City of Milwaukee (RACM).

### 2.2 Site Location

The Site is identified by the property address of 4132 North Holton Street, Milwaukee, Wisconsin and Parcel (Taxkey) Number 2419982000.

The Site is located in the southwest  $\frac{1}{4}$  of the southwest  $\frac{1}{4}$  of Section 4, Township 7 North, Range 22 East, and at Wisconsin Transverse Mercator (WTM) coordinates 690593, 293172 on WDNR's RR Sites Map. The Site location is depicted on **Figure 1**.

### 2.3 Site Description

The Site is a 3.7-acre vacant, grass-covered, parcel. Site removal action activities included Site capping and vegetative cover. The Site cap includes three components as depicted on **Figure 2** (i.e., clay cap, soil cover, and topsoil cover).

The Site is subject to "continuing obligations" in accordance with a Post-Removal Site Control Plan (Geosyntec, 2018), including a Cap Maintenance Plan in accordance with NR 724.13 and impacted property notifications in accordance with Wis. Stat. § 292.12(4) and NR 725.07.

The Site vicinity generally consists of light industrial, institutional, and commercial land use. The Site is bordered to the west by North Holton Street and a Wisconsin Army National Guard facility, to the north by a parking lot (Phoenix Cudahy, LLC), to the east by vacant land (Phoenix Cudahy, LLC/Pamida Seven, LLC and Scripps Media, LLC), and to the south by a parking lot and storage facility (DIV HDV Milwaukee I LLC).

Prior to Site removal action activities, the Site was developed with a centrally-located, approximately 70,000-square-foot industrial building formerly used for die-casting operations. The building was constructed in 1952 with an addition constructed in 1964. Die casting operations ceased in 1997. The building was demolished as part of the Site removal action. The former building footprint is depicted on **Figure 2**.

On-Site subsurface utilities were removed/abandoned as part of the Site removal action. The former Site subsurface utilities and the existing off-Site proximate utilities are depicted on **Figure 3**.

Historical records document the former presence of a trichloroethene (TCE) underground storage tank (UST) in the southwest portion of the Site (exterior of southwest corner of the former building).<sup>1</sup> The approximate location of the former TCE UST is depicted on **Figure 3**.

## **2.4 Previous CVOC Investigation and Removal Action Summary**

Previous Site investigation activities conducted between approximately 1991 and 2012 revealed CVOC impacts to Site soil and proximate off-Site soil to the east. The Site removal action included the excavation and disposal of on-Site unsaturated CVOC-impacted soil at concentrations reported at greater than USEPA industrial RSLs and off-site unsaturated CVOC-impacted soil at concentrations reported at greater than USEPA residential RSLs. The estimated extent of residual unsaturated CVOC soil impacts at the Site greater than WDNR groundwater protection residual contaminant levels (RCLs) is depicted on **Figure 3**.

Pre-removal action groundwater sampling conducted between 1998 and 2013 reported CVOC groundwater impacts at concentrations greater than NR 140 enforcement standards (ESs). The reported CVOC impacts consisted of TCE and tetrachloroethene (PCE) and their degradation products [cis-1,2- and trans-1,2-dichloroethene (DCE) and vinyl chloride]. The pre-removal action groundwater sampling data are summarized in **Table 1**. **Figure 3** depicts the former groundwater monitoring well locations and highlights the former well locations in which CVOCs were reported as detected at concentrations greater than NR 140 ESs in the most recent sampling event (2013). The wells were abandoned in accordance with NR 141 during the Site removal action.

## **2.5 Physiographical and Geological Setting**

### **2.5.1 Topography and Drainage**

The Site ground surface topography slopes from west to east as depicted on **Figure 2**. Site vicinity topography generally slopes to the east towards the Milwaukee River which is located approximately 500 feet east of the Site as depicted on **Figure 1**.

---

<sup>1</sup> Historical information presented in this work plan is based on information provided by others and has been relied on as accurate. If it is determined that this information is inaccurate or incomplete, this work plan and any associated reports may be revised, amended and/or supplemented as appropriate.

Site storm water runoff flows by overland flow with topography towards a shallow swale on the east side of the Site. The swale conveys stormwater to a storm sewer catch basin proximate to the northeast corner of the Site.

### **2.5.2 Geology and Hydrogeology**

The Site geology generally consists of up to approximately 12 feet of soil fill (clay, silty clay, and silt with sand and gravel and sands) overlying stiff to hard, low-permeability glacial till (predominantly silt with trace fine sand and gravel). The till unit contains discontinuous fine to coarse-grained sand lenses. In the eastern portion of the Site, a discontinuous clay unit was observed beneath the soil fill unit (and overlying the till unit).

Bedrock of the Milwaukee Formation (dolomite, dolomitic siltstone, and shale) underlies the glacial till in the Site vicinity (WGNHS, 2004b). The depth to bedrock in the Site vicinity is approximately 50 to 100 feet below ground surface (bgs) (WGNHS, 2004b).

Removal action activities modified the subsurface conditions at the Site. Removal action excavation depths ranged from approximately 2 to 20 feet bgs. The approximate extent of removal action soil removal is depicted on **Figure 2**. The removal action areas were backfilled and compacted with documented clean off-Site borrow source soil and relocated on-Site and proximate off-Site soil. Further, a cap was constructed over the Site consisting of three components (2-foot clay cap, 2-foot soil cover, and 6-inch topsoil cover) as depicted on **Figure 2**.

Groundwater occurs at the Site at shallow depths (typically ranging from approximately 3 to 14 feet bgs). The water table is typically within the soil fill unit. The underlying till unit behaves as a low-permeability confining layer that limits downward seepage of groundwater from the soil fill unit.

Groundwater flow is generally to the east-northeast. Groundwater elevation data and contours for the most recent pre-removal action water level measurement event (September 23, 2013) are depicted on **Figure 3**.

### **3. PRE-INVESTIGATION**

This section provides a description of pre-investigation activities that will be conducted prior to implementing the additional groundwater and vapor pathway investigation field work.

#### **3.1 Health and Safety Plan**

The Site investigation field work will be conducted pursuant to a Site-specific, work-specific Health and Safety Plan (HASP) prepared in accordance with applicable Occupational Safety and Health Standards (OSHA) regulations.

#### **3.2 Utility Assessment**

An assessment of proximate off-Site subsurface utilities will be conducted to assist in establishing groundwater and vapor pathway investigation locations. This assessment will include City of Milwaukee records review and field surveying to confirm the utility location information depicted on **Figure 3** and to determine the invert elevations of these utilities.

#### **3.3 Permits and Access Agreements**

A City of Milwaukee Right-of-Way (ROW)/Drilling Permit will be obtained to conduct groundwater and vapor pathway investigation work within the North Holton Street ROW adjacent to the west of the Site.

Access agreements will be executed to conduct groundwater and vapor pathway investigation on properties adjacent to the east of the Site.

#### 4. ADDITIONAL GROUNDWATER INVESTIGATION

This section provides the objectives, scope and rationale, and procedures of the additional groundwater investigation.

##### 4.1 Objectives

The objectives of the additional groundwater investigation are to evaluate post-removal action groundwater quality, potential migration pathways, and specific areas identified by WDNR on Pages 4 and 5 of the WDNR Notice Letter including the following:

- Area adjacent to storm and sanitary sewers immediately to the east (downgradient) of the Site to assess the sewers (trench backfill) as preferential migration pathways.
- Area of former TCE UST (and area of former groundwater monitoring well GMMW-104) in the southwest portion of the Site.
- Area of abandoned underground gas line trending west of northwest corner of former building and upgradient of former groundwater monitoring well GMMW-102.
- Area of residual CVOC soil impacts in vicinity of former transformers in the southeast portion of the Site.
- Additional locations as indicated to evaluate overall Site groundwater quality, the extent of CVOC groundwater impacts greater than NR 140 ESs and subsequently to evaluate plume stability, if necessary.

##### 4.2 Scope and Rationale

The proposed additional groundwater investigation will include approximately 13 groundwater monitoring wells and three piezometers. The proposed monitoring well and piezometer locations are depicted on **Figure 4**. The following table summarizes the rationale for each of the proposed groundwater monitoring well and piezometer locations:

| Proposed Well ID | Location/Rationale for Location  |
|------------------|--|
| MW-1<br>PZ-1     | on-Site (southwest); downgradient of former TCE UST, near former GMMW-104 (groundwater CVOCs reported > NR 140 ESs), area of residual unsaturated soil CVOCs reported > WDNR groundwater protection RCLs |

| <b>Proposed Well ID</b> | <b>Location/Rationale for Location</b>   |
|-------------------------|--|
| MW-2<br>PZ-2            | on-Site (west-central); vicinity of former GMMW-102 and GMMW-103 (groundwater CVOCs reported > NR 140 ESs), area of residual unsaturated soil CVOCs reported > WDNR groundwater protection RCLs  |
| MW-3                    | on-Site (northwest); downgradient margin of Site, downgradient of former GMMW-102 and GMMW-103 (groundwater CVOCs reported > NR 140 ESs), downgradient of area of residual unsaturated soil CVOCs reported > WDNR groundwater protection RCLs                |
| MW-4                    | on-Site (northeast); downgradient margin of Site, area of residual unsaturated soil CVOCs reported > WDNR groundwater protection RCLs, near former GMMW-2  |
| MW-5                    | on-Site (east-central); downgradient margin of Site, vicinity of former GMMW-105 and GMMW-106 (groundwater CVOCs reported > NR 140 ESs)  |
| MW-6                    | on-Site (east-central); downgradient margin of Site, vicinity of former GMMW-107, GMMW-108, GMMW-110, and GMMW-202 (groundwater CVOCs reported > NR 140 ESs)   |
| MW-7                    | on-Site (southeast); vicinity of former GMMW-111 (groundwater CVOCs reported > NR 140 ESs), area of residual unsaturated soil CVOCs reported > WDNR groundwater protection RCLs, vicinity of former electrical substation (referenced in WDNR Notice Letter) |
| MW-8                    | off-Site (east); downgradient of former GMMW-108, GMMW-110, GMMW-111, and GMMW-202 (groundwater CVOCs reported > NR 140 ESs)   |
| MW-9<br>PZ-9            | off-Site (east); downgradient of former GMMW-105, GMMW-106, and GMMW-107 (groundwater CVOCs reported > NR 140 ESs)   |
| MW-10                   | off-Site (east); downgradient of Site; vicinity of existing storm sewers (to evaluate sewer backfill as potential preferential groundwater CVOC pathway)   |
| MW-11                   | off-Site (northeast); downgradient of Site; vicinity of existing storm and sanitary sewers (to evaluate sewer backfill as potential preferential groundwater CVOC pathway)   |
| MW-12                   | off-Site (west; within North Holton Street ROW); upgradient of Site; upgradient of former GMMW-102 (CVOCs reported > NR 140 ESs); vicinity of former east-west trending natural gas line (references in WDNR Notice Letter)                                  |
| MW-13                   | off-Site (west, within North Holton Street ROW); upgradient of Site; upgradient of former GMMW-104 (CVOCs reported > NR 140 ESs)   |

The groundwater monitoring well locations may be modified based on observed field conditions, the utility assessment findings (refer to Section 3.2), and permit and access agreement conditions (refer to Section 3.3).

Two rounds of groundwater sampling will be conducted. Additional groundwater sampling will be contingent upon the results of these two sampling events.



### **4.3 Procedures**

#### **4.3.1 Soil Boring Drilling**

Groundwater monitoring well soil borings will be advanced using a hollow-stem auger drill rig. Soil samples will be collected continuously using split-spoon samplers. Each soil sample will be classified in accordance with the Unified Soil Classification System (USCS) and field screened for VOCs with a photo-ionization detector (PID). The groundwater level observed during drilling will be recorded.

A soil boring log (WDNR Form 4400-122) will be completed for each groundwater monitoring well soil boring.

#### **4.3.2 Monitoring Well Installation and Development**

The groundwater monitoring wells will be installed in accordance with NR 141. It is anticipated that the water table monitoring wells will be screened from approximately 5 to 15 feet bgs and the piezometers will be screened from approximately 25 to 30 feet bgs. Completed screen intervals will be based on field observation during drilling. The wells will be constructed of two-inch nominal diameter Schedule 40 polyvinyl chloride (PVC) riser and 10-foot long (water table monitoring wells) or 5-foot long (piezometers) Schedule 40 PVC, 0.010-inch machine slotted well screen. The on-Site wells and off-Site wells east of the Site will be completed at the surface with a lockable protective steel stick-up casing and concrete surface seal. The wells within the North Holton Street ROW will be completed with a flush-mount steel, bolt-down cover. A Well Construction Form (WDNR Form 4400-113A) will be completed for each groundwater monitoring well.

The groundwater monitoring wells will be developed in accordance with NR 141. Development will include multiple cycles of purging and surging using a surge block. A portable water quality meter will be used to record the pH, conductivity, dissolved oxygen (DO), oxidation reduction potential (ORP), turbidity and temperature of the purged water. A Monitoring Well Development Form (WDNR Form 4400-113B) will be completed for each groundwater monitoring well.

#### **4.3.3 Surveying**

The location and elevation of the groundwater monitoring wells will be surveyed. Surveying will include northing and easting coordinates (State Plane Coordinates) and ground surface and top of casing elevations [National Geodetic Vertical Datum of 1929 (NGVD 29)].

#### 4.3.4 Groundwater Sampling and Analysis

Prior to sampling, the groundwater monitoring wells will be opened and the depth to water will be measured with an electronic water level indicator.

Groundwater samples will be collected using low-flow purging and sampling methods in accordance with NR 140 and the WDNR “Groundwater Sampling Field Manual” (WDNR, 1996).

During low flow purging, field parameters (pH, temperature, conductivity, DO, turbidity, and ORP) will be monitored using a portable water quality meter until the parameters stabilize.

Collected groundwater samples will be immediately placed in laboratory supplied containers and placed in a cooler with ice for submittal to the laboratory.

The groundwater samples will be submitted to a NR 149 accredited laboratory under standard chain-of-custody protocols. The following table summarizes the laboratory analytical methods for the groundwater samples:

| Parameter                  | Analytical Method    |
|----------------------------|----------------------|
| VOCs                       | USEPA 8260           |
| methane, ethane and ethene | USEPA 8015B Modified |
| total organic carbon (TOC) | USEPA 9060           |

#### 4.3.5 Investigation-Derived Waste Management

Soil boring cuttings, development water, and sampling purge water will be contained in 55-gallon drums. The drums will be labeled and staged on-Site pending disposal.

#### 4.3.6 Quality Assurance/Quality Control

Sampling and analysis quality assurance and quality control (QA/QC) procedures will be conducted in general accordance with NR 716.13(6) and include the following:

- One duplicate sample for every 10 or less samples.
- One equipment blank for every 10 or less samples, unless dedicated sampling equipment is used.
- One trip blank for each shipping container containing samples for VOC analysis.
- Decontamination of sampling equipment between each sampling location, unless dedicated or disposable sampling equipment are used.

- Checking and calibrating field instruments in accordance with manufacturer's instructions.

The quality of the laboratory analytical data will be evaluated by reviewing the chain-of-custody forms, holding times, analytical detection limits, results of field QA/QC sample analyses, and laboratory QA/QC results (method blanks, surrogates, and laboratory control samples).

#### **4.3.7 Site Cap Considerations**

Care will be taken to minimize the disturbance of the Site cap and vegetative cover during groundwater monitoring well installation. If necessary, repairs will be made in accordance with the Site Cap Maintenance Plan. Groundwater monitoring wells within the Site cap will be completed with concrete surface seals to prevent infiltration into the cap.

#### **4.3.8 Data Evaluation**

The validated additional groundwater investigation data (and the pre-removal action data), will be evaluated with respect to the additional groundwater investigation objectives. This evaluation will generally include groundwater flow and contaminant migration characteristics, including potential preferential migration pathways; the distribution of CVOC groundwater impacts greater than NR 140 ESs; and CVOC groundwater degradation characteristics [i.e., magnitude and distribution of CVOC source constituents (TCE and PCE) and their degradation products (cis-1,2-DCE, trans-1,2-DCE, vinyl chloride, ethene, and ethane)].

## 5. VAPOR PATHWAY INVESTIGATION

This section provides the objectives, scope and rationale, and procedures for the vapor pathway investigation.

### 5.1 Objectives

A vapor pathway investigation will be conducted pursuant to Page 5 of the WDNR Notice Letter. The objectives of the vapor pathway investigation are as follows;

- Assess the potential for post-removal action off-Site soil vapor migration preferential pathways.
- Assess post-removal action residual on-Site vapor risk.

### 5.2 Scope and Rationale

Soil gas sampling will be conducted on the Site margins to assess potential off-site soil vapor migration preferential pathways. The proposed soil gas probe locations are depicted on **Figure 4**. The following table summarizes the rationale for each of the proposed seven soil gas probe locations:

| <b>Proposed Soil Gas Probe ID</b> | <b>Location/Rationale for Location</b>  |
|-----------------------------------|---|
| SG-1                              | off-site (southwest); former natural gas lateral location; proximate residual unsaturated soil and pre-removal action groundwater CVOC impacts    |
| SG-2                              | off-site (southwest); former water lateral location; proximate residual unsaturated soil and pre-removal action groundwater CVOC impacts          |
| SG-3                              | off-site (southwest); former water lateral location; proximate residual unsaturated soil and pre-removal action groundwater CVOC impacts          |
| SG-4                              | off-site (west-central); former natural gas lateral location; proximate residual unsaturated soil and pre-removal action groundwater CVOC impacts |
| SG-5                              | off-site (east); former storm sewer lateral location; proximate pre-removal action unsaturated soil and groundwater CVOC impacts                  |
| SG-6                              | off-site (east); former sanitary sewer lateral location; proximate pre-removal action unsaturated soil and groundwater CVOC impacts               |
| SG-7                              | off-site (east); former storm sewer lateral location; proximate pre-removal action groundwater CVOC impacts                                       |

The soil gas probe locations may be modified based on observed field conditions, the utility assessment findings (refer to Section 3.2), and permit and access agreement conditions (refer to Section 3.3).

### **5.3 Procedures**

#### **5.3.1 Soil Gas Sampling**

The soil gas probes will be advanced with a track or truck-mounted Geoprobe® unit. Soil samples will be collected continuously with a macro-core sampler. Each soil sample will be classified in accordance with the USCS and field screened with a PID. A soil boring log (WDNR Form 4400-122) will be completed for each soil gas probe.

The soil gas probes will be installed to a depth of approximately 5 feet bgs (within unsaturated zone) using 1/4-inch Nylaflo® tubing connected via a compression fitting to a six-inch-long, 1/4-inch-diameter stainless steel sampling screen. A sand filter pack will be placed in the annulus to a height of approximately three inches above the screen. Granular bentonite will be placed and wetted in two lifts of approximately three inches each above the filter pack and then a thick slurry of powdered bentonite and water will be added to seal the remainder of the borehole annulus to ground surface. The top of the soil gas probes will be fitted with valves to maintain an air-tight seal.

After installation, the soil gas probes will be allowed to rest at least two hours and then purged by removing a minimum of one liter of soil gas. Purging will be completed using a lung box and Tedlar™ bag, then purged gas will be screened with a gas meter for oxygen (O<sub>2</sub>), carbon dioxide (CO<sub>2</sub>), and methane (CH<sub>4</sub>) to assess sub-surface soil gas conditions.

Soil gas samples will be collected with Summa® canisters and submitted to a NR 149 accredited laboratory under standard chain-of-custody protocols for laboratory analysis of VOCs by USEPA Method TO-15.

The location and ground surface elevation of the soil gas probes will be surveyed. The soil gas probes will be abandoned with bentonite chips following the collection of soil gas samples. Probe abandonment will be documented on borehole abandonment forms (WDNR Form 3300-005).

#### **5.3.2 Investigation-Derived Waste Management**

Soil gas probe cuttings will be contained in 55-gallon drums (combined with groundwater investigation soil boring cuttings). The drums will be labeled and staged on-Site pending disposal.

### 5.3.3 Quality Assurance/Quality Control

Sampling and analysis QA/QC procedures will include the following:

- One duplicate soil gas sample.
- Decontamination of sampling equipment between each sampling location, unless dedicated or disposable sampling equipment are used.
- Checking and calibrating field instruments in accordance with manufacturer's instructions.
- Each soil gas vapor probe will be leak tested by placing a small plastic shroud filled with helium over each soil gas probe and a minimum of 20% helium (He) will be injected into the shroud as a tracer. During sampling activities, purged vapors will be screened for the presence of helium using an MDG-2002 helium meter to determine if there are leaks in the sampling train. If elevated concentrations of helium (>5% of the shroud concentration) are observed in the purged vapors, the soil gas probe seal will be checked and/or enhanced to reduce the infiltration of ambient air into the probe and another purge sample will be collected.

The quality of the laboratory analytical data will be evaluated by reviewing the chain-of-custody forms, holding times, analytical detection limits, results of field QA/QC sample analyses, and laboratory QA/QC results (method blanks, surrogates, and laboratory control samples).

### 5.3.1 Data Evaluation

The potential for post-removal action off-Site soil vapor migration preferential pathways will be assessed through the evaluation of the utility assessment, soil gas sampling, and groundwater level data. The validated soil gas sampling results will be compared to WDNR soil gas vapor risk screening levels (VRSLs).

The groundwater sampling and groundwater level data will be used to assess the residual on-Site vapor risk. The use of groundwater data is considered appropriate based on the shallow nature of groundwater at the Site. Groundwater VRSLs will be calculated for the Site in accordance with WDNR guidance "Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin" (WDNR, 2018b). The groundwater sampling data will subsequently be compared to the calculated groundwater VRSLs.

## 6. REPORTING AND SCHEDULE

The additional groundwater investigation and vapor pathway investigation findings and conclusions will be documented in a Supplemental Site Investigation Report prepared in accordance with NR 716.15.

It is anticipated that the investigation field activities will be conducted in 1Q2019 or 2Q2019 contingent upon weather conditions and WDNR approval of this work plan. The second round of groundwater sampling would be conducted approximately three months following the initial sampling event. The Supplemental Site Investigation Report will be submitted to WDNR within 60 days after the receipt of the laboratory results of the second groundwater sampling event. Schedule updates will be provided to WDNR in the NR 700 semi-annual progress reports.

---

## 7. REFERENCES

Geosyntec Consultants (2018). Post-Removal Site Control Plan, Milwaukee Die Casting Corporation (MDCC) Site; prepared for Pharmacia LLC; April 6, 2018.

WDNR (2018a). Reported Contamination at Milwaukee Die Casting Company, Inc., 4132 N. Holton Street, Milwaukee, WI, BRRTS Activity # 02-41-000023, FID # 241228240; to Pharmacia LLC and Fisher Controls International, Inc.; August 10, 2018.

WDNR (2018b). Addressing Vapor Intrusion at Remediation & Redevelopment Sites in Wisconsin, WDNR Publication RR-800, January 2018.

WDNR (1996). Groundwater Sampling Field Manual, WDNR Publication DG-038 96, September 1996.

USEPA (2018). Notification of Completion-Compliance with Settlement Agreement, Docket No. V-W-13-C-007, for the Milwaukee Die Casting Site, Milwaukee County, WI (Site ID #B5ZP), to Pharmacia LLC, August 20, 2018.

USEPA (2013). Administrative Settlement Agreement and Order on Consent for Removal Action, Milwaukee Die Casting Site, March 6, 2013.

USGS (2013). Milwaukee, Wisconsin, 7.5 Minute Series (Topographic) Quadrangle Map, 2013.

WGNHS (2004a). Preliminary Bedrock Geologic Map of Milwaukee County, Wisconsin, Wisconsin Geological and Natural History Survey Open File Report 2004-14A.

WGNHS (2004b). Preliminary Depth to Bedrock Map of Milwaukee County, Wisconsin; Wisconsin Geological and Natural History Survey Open File Report 2004-14C.



# TABLES

**Site Investigation Work Plan**  
Milwaukee Die Casting Company Site  
4132 North Holton Street  
Milwaukee, Wisconsin  
WDNR BRRTS # 02-41-000023  
WDNR FID # 241228240

**TABLE 1**  
**PRE-SOIL REMOVAL ACTION CVOC GROUNDWATER ANALYTICAL DATA SUMMARY**  
Milwaukee Die Casting Company (MDCC) Site  
4132 North Holton Street, Milwaukee, Wisconsin

| Well ID  | Screen Interval (ft bgs) | Sample Date | PCE          | TCE           | cis-1,2-DCE | trans-1,2-DCE | VC         |
|----------|--------------------------|-------------|--------------|---------------|-------------|---------------|------------|
| GMMW-1   | 6-16                     | 4/8/1998    | ND           | ND            | ND          | ND            | ND         |
|          |                          | 10/21/1998  | ND           | ND            | ND          | ND            | ND         |
|          |                          | 2/8/1999    | ND           | ND            | ND          | ND            | ND         |
|          |                          | 7/25/2002   | ND           | ND            | ND          | ND            | ND         |
|          |                          | 4/5/2005    | ND           | ND            | ND          | ND            | ND         |
|          |                          | 5/16/2005   | ND           | ND            | ND          | ND            | ND         |
|          |                          | 6/2/2011    | ND           | ND            | ND          | ND            | ND         |
| GMMW-2   | 7-17                     | 4/8/1998    | ND           | 2.3           | 0.98        | ND            | ND         |
|          |                          | 7/26/2002   | ND           | 1.2 Q         | 22          | 0.79 Q        | ND         |
|          |                          | 4/5/2005    | 1.1          | <b>23</b>     | 2.6         | ND            | ND         |
|          |                          | 6/1/2011    | ND           | <b>13</b>     | 8.8         | ND            | ND         |
| GMMW-3   | 5-15                     | 4/9/1998    | 2.2          | 3.5           | 5.4         | ND            | <b>1.4</b> |
|          |                          | 10/22/1998  | ND           | 1.7           | 21          | 1.9           | <b>25</b>  |
|          |                          | 2/9/1999    | ND           | 2.1           | 6.9         | 0.5           | <b>2.3</b> |
|          |                          | 7/26/2002   | ND           | 1.8 Q         | 4.9         | ND            | <b>1.1</b> |
|          |                          | 4/5/2005    | ND           | 1.9           | ND          | ND            | ND         |
|          |                          | 6/1/2011    | ND           | ND            | ND          | ND            | ND         |
| GMMW-4   | 6-16                     | 4/9/1998    | ND           | ND            | ND          | ND            | ND         |
|          |                          | 10/21/1998  | ND           | ND            | ND          | ND            | ND         |
|          |                          | 2/8/1999    | ND           | ND            | ND          | ND            | ND         |
|          |                          | 7/25/2002   | ND           | ND            | ND          | ND            | ND         |
|          |                          | 4/5/2005    | ND           | ND            | ND          | ND            | ND         |
|          |                          | 6/1/2011    | ND           | ND            | ND          | ND            | ND         |
| GMMW-5   | 5-15                     | 4/9/1998    | ND           | ND            | 2.2         | ND            | ND         |
|          |                          | 10/22/1998  | ND           | ND            | 2.7         | ND            | ND         |
|          |                          | 2/8/1999    | ND           | ND            | 1.3         | ND            | ND         |
|          |                          | 7/25/2002   | ND           | ND            | 1.2 Q       | ND            | ND         |
|          |                          | 4/5/2005    | ND           | ND            | 1.4         | ND            | ND         |
| GMMW-6   | 9-19                     | 6/4/1998    | ND           | ND            | ND          | ND            | ND         |
|          |                          | 10/21/1998  | ND           | ND            | ND          | ND            | ND         |
|          |                          | 2/8/1999    | ND           | ND            | ND          | ND            | ND         |
|          |                          | 6/2/2011    | ND           | ND            | ND          | ND            | ND         |
| GMMW-100 | +1-4                     | 4/6/2005    | ND           | ND            | ND          | ND            | ND         |
| GMMW-101 | 3.5-13.5                 | 4/6/2005    | ND           | ND            | ND          | ND            | ND         |
|          |                          | 6/1/2011    | ND           | ND            | ND          | ND            | ND         |
|          |                          | 8/5/2013    | ND           | ND            | ND          | ND            | ND         |
| GMMW-102 | 4-14                     | 4/6/2005    | ND           | ND            | ND          | ND            | ND         |
|          |                          | 5/31/2011   | ND           | <b>18</b>     | ND          | ND            | ND         |
|          |                          | 8/5/2013    | <b>11</b>    | 0.25 J        | ND          | ND            | ND         |
| GMMW-103 | 4-14                     | 4/6/2005    | 1.4          | 0.51          | 6.9         | ND            | ND         |
|          |                          | 5/31/2011   | <b>490</b>   | <b>130</b>    | <b>230</b>  | 20            | ND         |
|          |                          | 8/6/2013    | <b>470</b>   | <b>84</b>     | <b>79</b>   | 3.4           | ND         |
| GMMW-104 | 3-13                     | 4/6/2005    | <b>18000</b> | <b>200000</b> | 30          | ND            | ND         |
|          |                          | 6/2/2011    | <b>10</b>    | <b>20</b>     | <b>2600</b> | 30            | ND         |
|          |                          | 8/7/2013    | <b>34</b>    | <b>91</b>     | <b>1900</b> | 17            | <b>250</b> |

**TABLE 1**  
**PRE-SOIL REMOVAL ACTION CVOC GROUNDWATER ANALYTICAL DATA SUMMARY**  
 Milwaukee Die Casting Company (MDCC) Site  
 4132 North Holton Street, Milwaukee, Wisconsin

| Well ID                          | Screen Interval (ft bgs) | Sample Date | PCE        | TCE        | cis-1,2-DCE | trans-1,2-DCE | VC          |
|----------------------------------|--------------------------|-------------|------------|------------|-------------|---------------|-------------|
| GMMW-105                         | 5-15                     | 4/6/2005    | ND         | 0.76       | ND          | ND            | ND          |
|                                  |                          | 6/2/2011    | ND         | ND         | 11          | ND            | <b>11</b>   |
|                                  |                          | 8/6/2013    | ND         | 1.6        | <b>220</b>  | 1.8           | <b>69</b>   |
| GMMW-106                         | 6-16                     | 4/6/2005    | ND         | ND         | ND          | ND            | ND          |
|                                  |                          | 6/2/2011    | ND         | <b>7.6</b> | 44          | ND            | <b>19</b>   |
|                                  |                          | 8/7/2013    | <b>79</b>  | <b>45</b>  | <b>110</b>  | 6.5           | <b>55</b>   |
| GMMW-107                         | 4-14                     | 4/6/2005    | ND         | ND         | 2.8         | ND            | <b>27</b>   |
|                                  |                          | 6/2/2011    | ND         | ND         | ND          | ND            | <b>6.8</b>  |
|                                  |                          | 8/7/2013    | ND         | ND         | 0.55 J      | ND            | <b>3.1</b>  |
| GMMW-108                         | 4-14                     | 4/6/2005    | <b>27</b>  | <b>31</b>  | <b>740</b>  | 28            | <b>6.4</b>  |
|                                  |                          | 6/2/2011    | <b>7.6</b> | <b>27</b>  | <b>460</b>  | 11            | <b>160</b>  |
|                                  |                          | 8/7/2013    | 2.8 J      | <b>13</b>  | <b>1700</b> | 12            | <b>150</b>  |
| GMMW-109                         | 4-14                     | 4/6/2005    | ND         | ND         | ND          | ND            | ND          |
|                                  |                          | 6/2/2011    | ND         | ND         | ND          | ND            | ND          |
|                                  |                          | 8/6/2013    | ND         | ND         | ND          | ND            | ND          |
| GMMW-110                         | 1-6                      | 4/6/2005    | <b>280</b> | <b>140</b> | <b>73</b>   | 3.2           | <b>3.0</b>  |
|                                  |                          | 6/1/2011    | <b>210</b> | <b>59</b>  | 26          | ND            | ND          |
|                                  |                          | 8/13/2013   | <b>44</b>  | <b>130</b> | <b>87</b>   | 1.1           | ND          |
| GMMW-111                         | +1-4                     | 4/7/2005    | <b>720</b> | <b>570</b> | <b>910</b>  | 58            | <b>0.72</b> |
|                                  |                          | 6/1/2011    | <b>460</b> | <b>840</b> | <b>890</b>  | 85            | <b>110</b>  |
|                                  |                          | 8/7/2013    | <b>60</b>  | <b>110</b> | <b>110</b>  | 5.6           | <b>3.6</b>  |
| GMMW-200                         | 2-12                     | 9/10/2013   | ND         | ND         | ND          | ND            | ND          |
|                                  |                          | 9/23/2013   | ND         | ND         | ND          | ND            | ND          |
| GMMW-201                         | 2-12                     | 9/9/2013    | ND         | 0.78       | 5.6         | 0.54 J        | ND          |
|                                  |                          | 9/24/2013   | 0.87 J     | 3.7        | 14          | 0.85 J        | ND          |
| GMMW-202                         | 2-12                     | 8/16/2013   | <b>9.8</b> | <b>12</b>  | <b>120</b>  | 10            | <b>16</b>   |
|                                  |                          | 9/24/2013   | <b>24</b>  | <b>21</b>  | 46          | 1.6           | <b>2.3</b>  |
| GMMW-203                         | 2-12                     | 8/16/2013   | ND         | 0.5        | 1.1         | ND            | ND          |
| GMPZ-200                         | 25-30                    | 9/9/2013    | ND         | ND         | ND          | ND            | ND          |
|                                  |                          | 9/25/2013   | ND         | ND         | ND          | ND            | ND          |
| GMPZ-201                         | 25-30                    | 9/9/2013    | ND         | ND         | ND          | ND            | ND          |
|                                  |                          | 9/24/2013   | ND         | ND         | ND          | ND            | ND          |
| NR 140 Enforcement Standard (ES) |                          |             | 5          | 5          | 70          | 100           | 0.2         |

*Notes:*

bold + box - concentration > NR 140 ES

CVOC - chlorinated volatile organic compound

ft bgs - feet below ground surface

DCE - dichloroethene

J - estimated concentration between LOD and LOQ

LOD - limit of detection

LOQ - limit of quantitation

ND - not detected

PCE - tetrachloroethene

Q - result confirmed by re-analysis

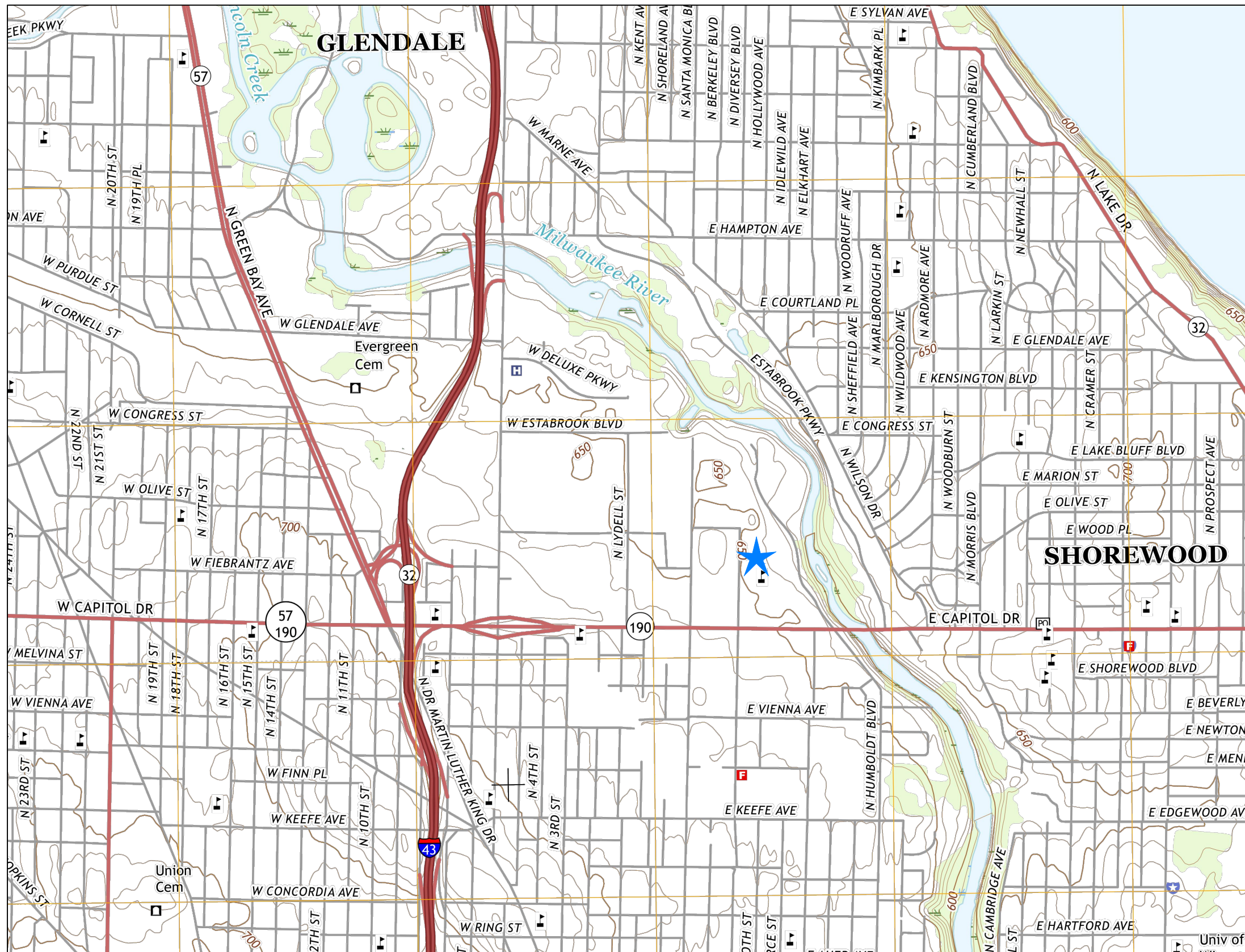
TCE - trichloroethene

µg/L - micrograms per liter

VC - vinyl chloride

# FIGURES

**Site Investigation Work Plan**  
Milwaukee Die Casting Company Site  
4132 North Holton Street  
Milwaukee, Wisconsin  
WDNR BRRTS # 02-41-000023  
WDNR FID # 241228240



**LEGEND**

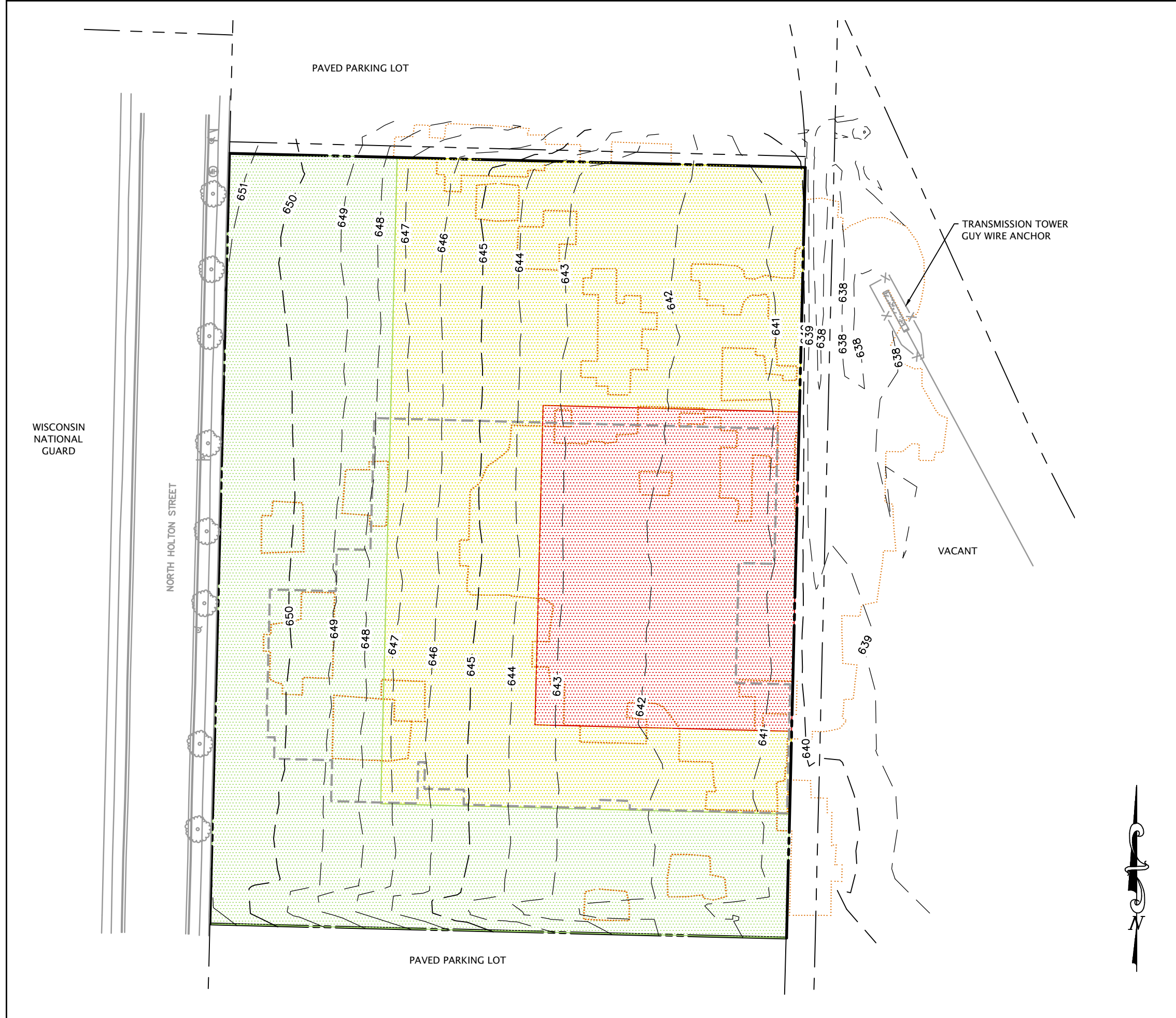


APPROXIMATE SITE LOCATION

REFERENCE: USGS MILWAUKEE, WI - 2016  
 SCALE: 1" = 1500' (APPROXIMATE)

**Geosyntec**<sup>®</sup>  
 consultants

|          |   |              |        |
|----------|---|--------------|--------|
| CLIENT:  | PHARMACIA, LLC.   |              |        |
| PROJECT: | MILWAUKEE DIE CASTING COMPANY (MDCC) SITE<br>4132 NORTH HOLTON STREET<br>MILWAUKEE, WISCONSIN |              |        |
| TITLE:   | SITE LOCATINO MAP   |              |        |
| PROJECT: | CHW8271M  | FIGURE NO.:  | 1      |
| DATE:    | Nov 2, 2018   | DRAWING NO.: | 1 OF 4 |



**LEGEND**

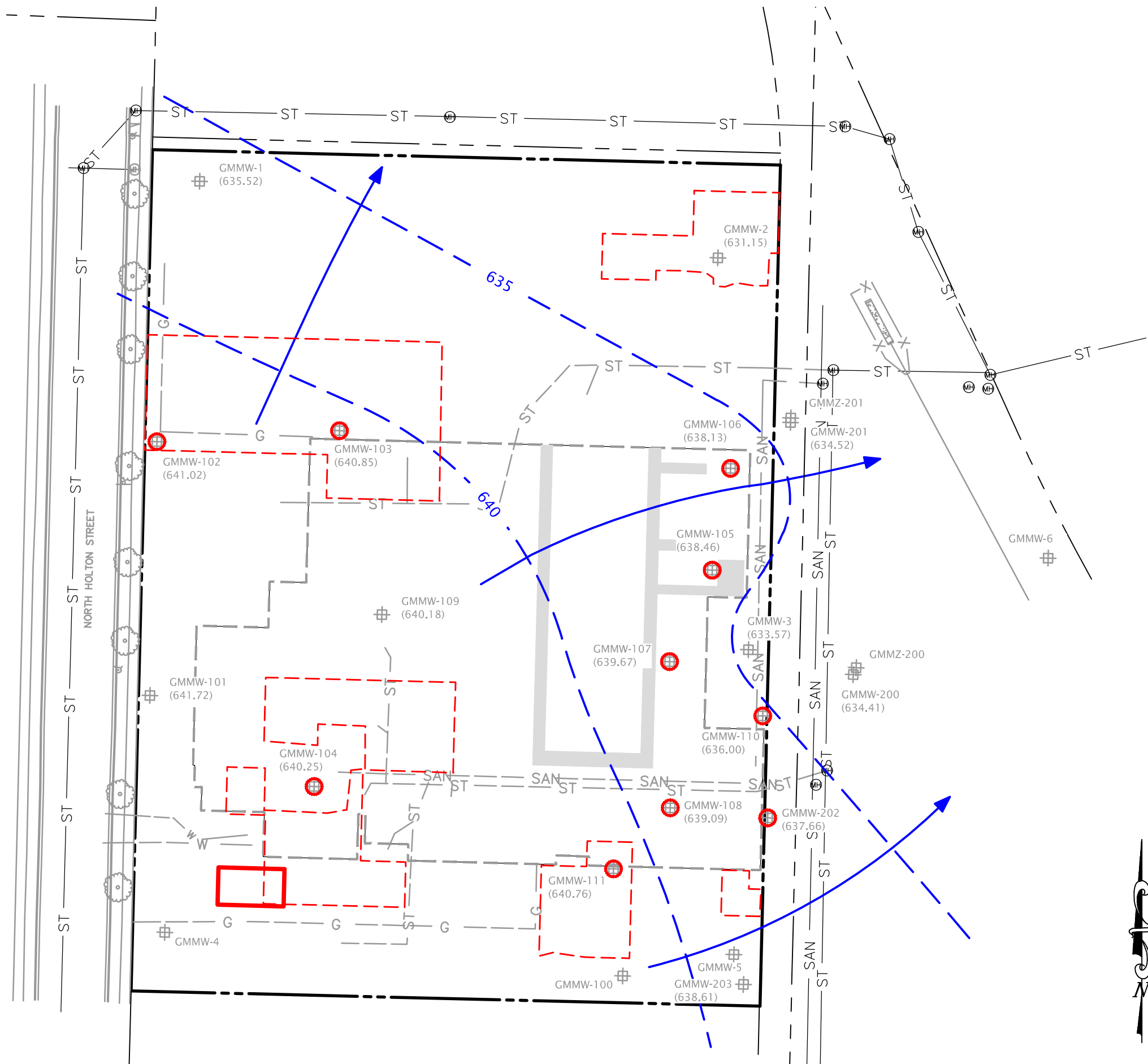
- APPROXIMATE SITE PROPERTY LINE
- APPROXIMATE ADJACENT PROPERTY LINES
- APPROXIMATE FORMER BUILDING FOOTPRINT
- APPROXIMATE EXTENT OF IMPACTED SOIL REMOVAL (2015)
- 1-FT GROUND SURFACE ELEVATION CONTOUR LINE (FEET ABOVE MEAN SEA LEVEL)
- CLAY CAP WITH VEGETATIVE (GRASS) COVER
- SOIL COVER WITH VEGETATIVE (GRASS) COVER
- TOPSOIL COVER WITH VEGETATIVE (GRASS) COVER



|                                 |   |                      |
|---------------------------------|---|----------------------|
| <b>Geosyntec</b><br>consultants |   |                      |
| CLIENT:                         | PHARMACIA, LLC.   |                      |
| PROJECT:                        | MILWAUKEE DIE CASTING COMPANY (MDCC) SITE<br>4132 NORTH HOLTON STREET<br>MILWAUKEE, WISCONSIN |                      |
| TITLE:                          | SITE LAYOUT MAP   |                      |
| PROJECT: CHW8271M               | FIGURE NO.: 2   | DRAWING NO.:         |
| DATE: Nov 2, 2018               | FILE NO. 1810MDCC906a   | <b>2</b> OF <b>4</b> |





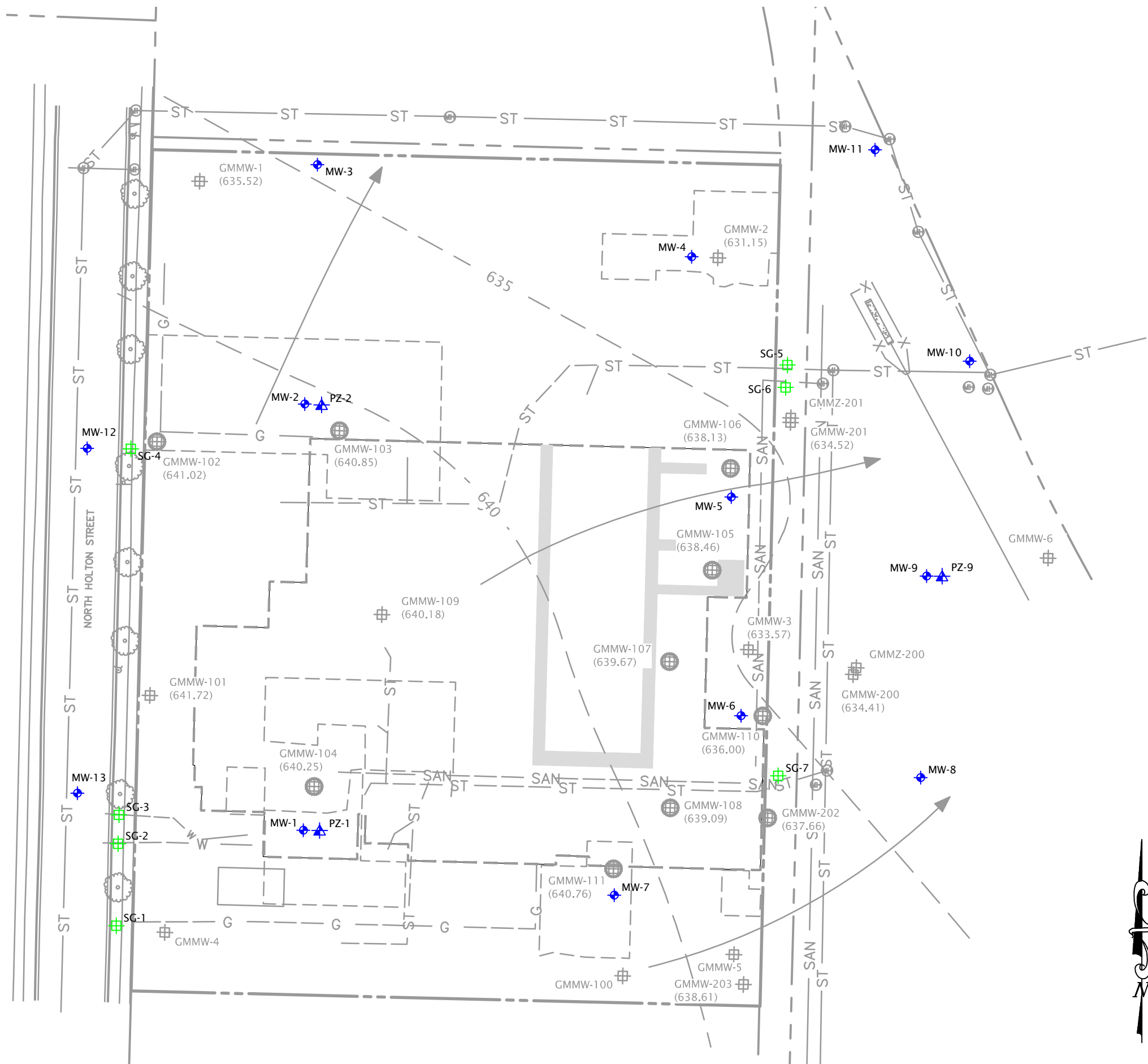


- LEGEND**
- APPROXIMATE SITE PROPERTY LINE
  - APPROXIMATE ADJACENT PROPERTY LINES
  - APPROXIMATE FORMER BUILDING FOOTPRINT
  - 640 GROUNDWATER CONTOUR ELEVATION (FEET ABOVE MEAN SEA LEVEL)
  - GROUNDWATER FLOW DIRECTION
  - GMMW-1 FORMER GROUNDWATER MONITORING WELL APPROXIMATE LOCATION
  - (634.25) GROUNDWATER ELEVATION (9/23/2013) (FEET ABOVE MEAN SEA LEVEL)
  - CVOC CONCENTRATIONS > NR 140 ES [PRE-REMOVAL ACTION]
  - APPROXIMATE LOCATION OF FORMER TCE UST
  - ESTIMATED EXTENT OF RESIDUAL CVOC-IMPACTED UNSATURATED SOIL > WDNR GROUNDWATER PROTECTION RCLs
  - SAN EXISTING SANITARY SEWER
  - ST EXISTING STORM SEWER
  - G FORMER NATURAL GAS UTILITY
  - W FORMER WATER UTILITY
  - ST FORMER STORM SEWER
  - SAN FORMER SANITARY SEWER
  - FORMER TUNNEL SYSTEM

- NOTES:**
- CVOC - CHLORINATED VOLATILE ORGANIC COMPOUND
  - ES - ENFORCEMENT STANDARD
  - RCLs - RESIDUAL CONTAMINANT LEVELS
  - TCE - TRICHLOROETHENE
  - UST - UNDERGROUND STORAGE TANK
  - WDNR - WISCONSIN DEPARTMENT OF NATURAL RESOURCES



|                                 |   |                      |
|---------------------------------|---|----------------------|
| <b>Geosyntec</b><br>consultants |   |                      |
| CLIENT:                         | PHARMACIA, LLC.   |                      |
| PROJECT:                        | MILWAUKEE DIE CASTING COMPANY (MDCC) SITE<br>4132 NORTH HOLTON STREET<br>MILWAUKEE, WISCONSIN |                      |
| TITLE:                          | CVOC SOIL AND GROUNDWATER SUMMARY   |                      |
| PROJECT: CHW8271M               | FIGURE NO.: 3   | DRAWING NO.:         |
| DATE: Nov 2, 2018               | FILE NO. 1810MDCC906a   | <b>3</b> OF <b>4</b> |



- LEGEND**
- MW-1 PROPOSED GROUNDWATER MONITORING WELL LOCATION
  - PZ-1 PROPOSED PIEZOMETER LOCATION
  - SG-1 PROPOSED SOIL GAS PROBE LOCATION
  - APPROXIMATE SITE PROPERTY LINE
  - APPROXIMATE ADJACENT PROPERTY LINES
  - APPROXIMATE FORMER BUILDING FOOTPRINT
  - 640 GROUNDWATER CONTOUR ELEVATION (FEET ABOVE MEAN SEA LEVEL)
  - GROUNDWATER FLOW DIRECTION
  - GMMW-1 FORMER GROUNDWATER MONITORING WELL APPROXIMATE LOCATION
  - (634.25) GROUNDWATER ELEVATION (9/23/2013) (FEET ABOVE MEAN SEA LEVEL)
  - CVOC CONCENTRATIONS > NR 140 ESs [PRE-REMOVAL ACTION]
  - APPROXIMATE LOCATION OF FORMER TCE UST
  - ESTIMATED EXTENT OF RESIDUAL CVOC-IMPACTED UNSATURATED SOIL > WDNR GROUNDWATER PROTECTION RCLs
  - SAN EXISTING SANITARY SEWER
  - ST EXISTING STORM SEWER
  - G FORMER NATURAL GAS UTILITY
  - W FORMER WATER UTILITY
  - ST FORMER STORM SEWER
  - SAN FORMER SANITARY SEWER
  - FORMER TUNNEL SYSTEM

- NOTES:**
- CVOC - CHLORINATED VOLATILE ORGANIC COMPOUND
  - ES - ENFORCEMENT STANDARD
  - RCLs - RESIDUAL CONTAMINANT LEVELS
  - TCE - TRICHLOROETHENE
  - UST - UNDERGROUND STORAGE TANK
  - WDNR - WISCONSIN DEPARTMENT OF NATURAL RESOURCES



|                                 |   |                     |
|---------------------------------|---|---------------------|
| <b>Geosyntec</b><br>consultants |   |                     |
| CLIENT:                         | PHARMACIA, LLC.   |                     |
| PROJECT:                        | MILWAUKEE DIE CASTING COMPANY (MDCC) SITE<br>4132 NORTH HOLTON STREET<br>MILWAUKEE, WISCONSIN |                     |
| TITLE:                          | PROPOSED INVESTIGATION MAP  |                     |
| PROJECT: CHW8271M               | FIGURE NO.: 4   | DRAWING NO.: 4 OF 4 |
| DATE: Nov 2, 2018               | FILE NO. 1810MDCC906a   |                     |